Localized Oscillations and Fraunhofer Diffraction in Crystalline Phases of a Monolayer

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Localized oscillations, recently found in crystalline phases of the heneicosanoic acid Langmuir monolayer, were studied. They seem like blinking interference rings, when observed with Brewster angle microscopy. Monolayers with localized oscillations were transferred on mica to be characterized by atomic force microscopy. We found granules produced by the expulsion of mater from the monolayer. However, these granules are too short to produce Newton's rings; the common belief of the origin of the interference rings in the field of Langmuir monolayers. The analysis of the interference rings is consistent with Fraunhofer diffraction caused by reflected light from the multilayer granules.